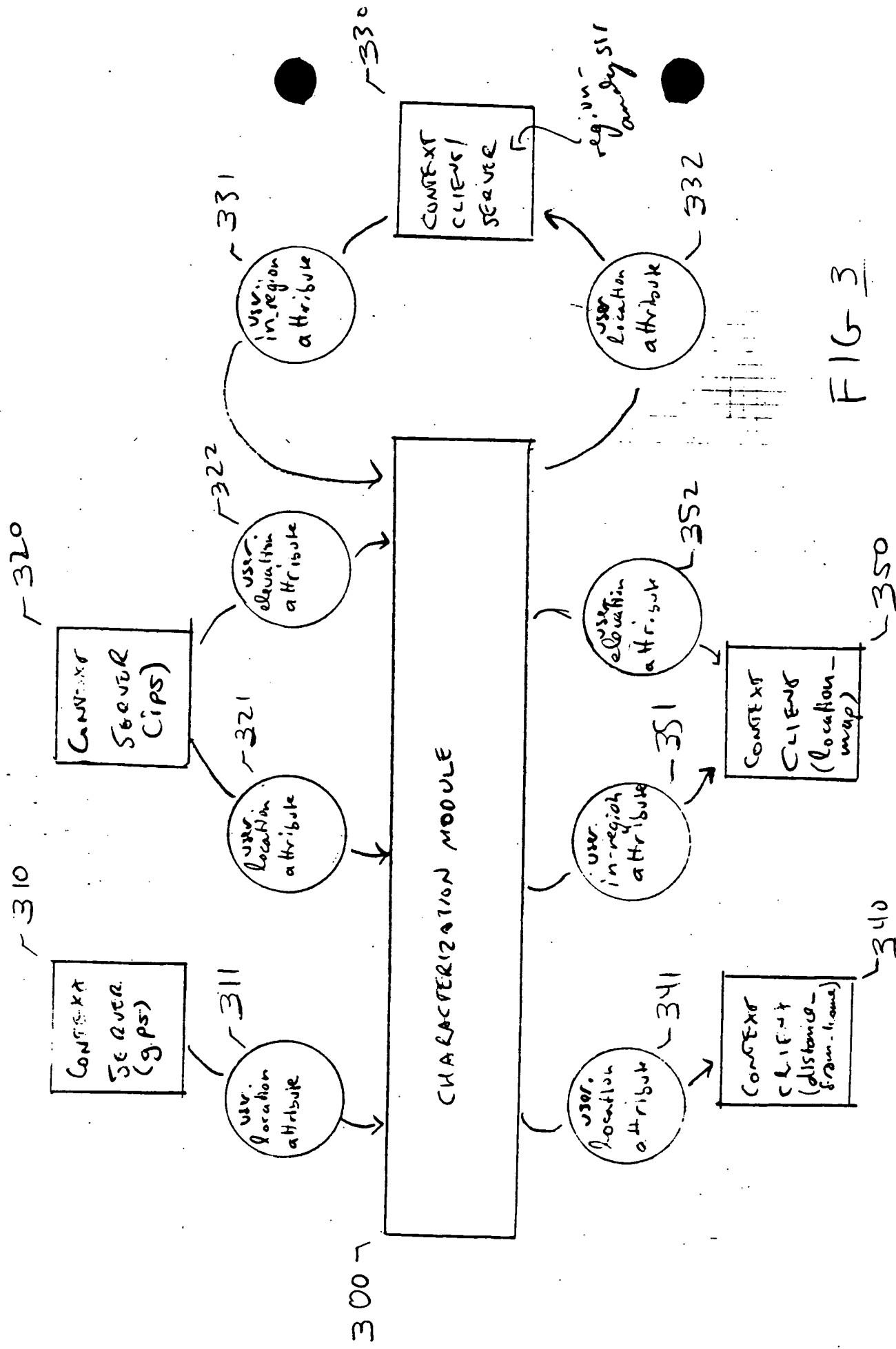


Fig. 2

CHARACTERIZATION MODULE



403
context server table

context server name	version	installation date	filename	request handler
gps	1	2/10/2000	gps.exe	(reference)
ips	1	2/21/2000	ips.exe	(reference)
location_region_analysis	1	2/10/2000	l_r_a.exe	(reference)

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FIG 4

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404
attribute instance table

attribute name	context server name	value	uncertainty	timestamp	units	number of context clients consuming
user.location	gps	47° 38.73' N, 122° 18.43' W	0° .09'	13:11:04.023 2/22/2000	degrees/minutes	2
user.location	ips	47° 38.745' N, 122° 18.424' W	0° .021'	13:11:01.118 2/22/2000	degrees/minutes	2
user.elevation	ips	22	.5	13:11:01.118 2/22/2000	meters	1
user.in_region	location_region_analysis	none	none	none	none	0

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context client table	
context client name	message handler
location map	(reference)
distance from home	(reference)
region analysis	(reference)

601 ~
602 ~
603 ~
604 ~

FIG 6

~ 700

attribute instance table				
attribute name	context server name	value	uncertainty	timestamp
user.location	gps	47° 38' 73" N, 122° 18' 43" W	0° .09'	13:11:04.023 2/22/2000
user.location	ips	47° 38' 745" N, 122° 18' 424" W	0° .021'	13:11:01.118 2/22/2000
user.elevation	ips	22	.5	13:11:01.118 2/22/2000
user.in_region	location_region_analysis	none	none	none

701 ~
702 ~
703 ~
704 ~

FIG 7

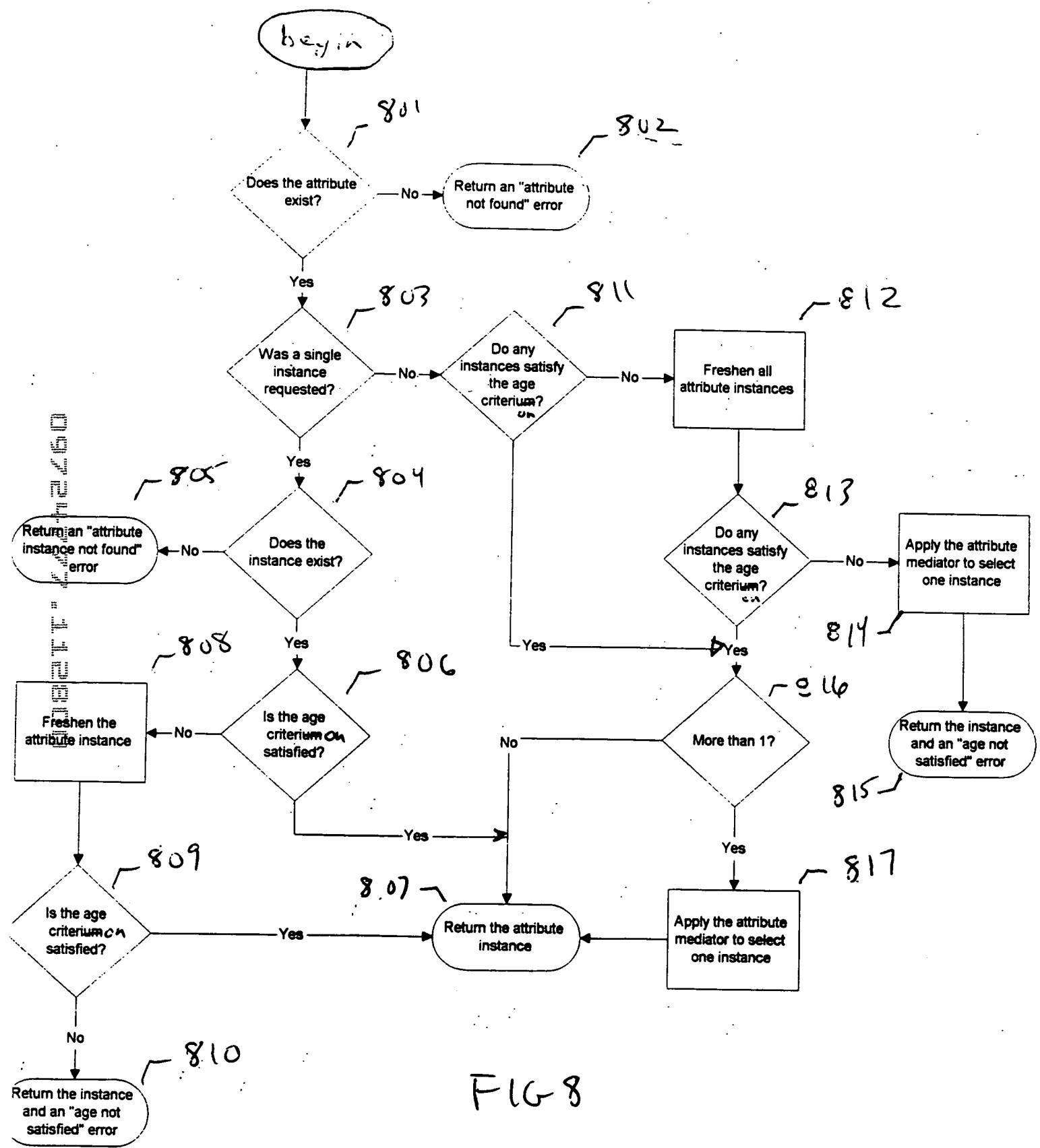


FIG 8

attribute instance table						
attribute name	context server name	value	uncertainty	timestamp	units	number of context clients consuming
user.location	gps	47° 38.73' N, 122° 18.43' W	0° .09'	13:11:04.023 2/22/2000	degrees/minutes	2
user.location	ips	47° 38.745' N, 122° 18.424' W	0° .021'	13:11:01.118 2/22/2000	degrees/minutes	2
user.elevation	ips	22.25	.5	13:11:06.565 2/22/2000	meters	1
user.in_region	region analysis	none	none	none	none	1

$\neg q_1 \wedge q_2 \wedge q_3 \wedge \neg q_4 \wedge q_5$ FIG 9 $\neg q_1 \wedge q_2 \wedge q_3 \wedge \neg q_4 \wedge q_5$ = 916 $\neg q_1 \wedge q_2 \wedge q_3 \wedge \neg q_4 \wedge q_5$ = 917

FIG 9

condition name	context client name	first logical parameter	second logical parameter	comparison value	logical operator
in region true	region analysis	'user' in region	none	TRUE	=

FIG 10

卷之三

condition monitor table

condition monitor name	context client name	condition name	behavior	frequency	condition last evaluated	trigger handler reference	stopped
region_boundary crossed	region_analysis	in_region_true	TRUE or FALSE	30	13:11:29.101 2/22/2000	(reference)	no

1
10

condition monitor table ✓ 1200

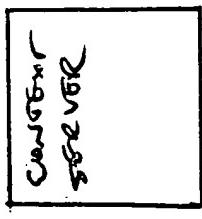
231

FIG 12

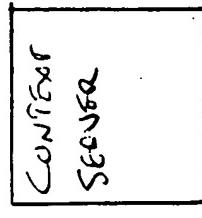
\\Seas-apps\\Patent\\Clients\\Tangis (29443)\\8005 - CM AP\\\\misc\\tables.doc

CONTEXT SERVER

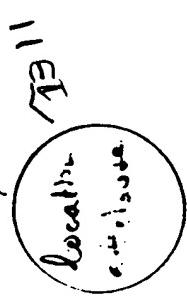
✓1310



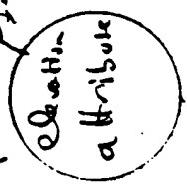
✓1320



✓1311



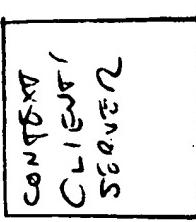
✓1321



✓1322



✓1330

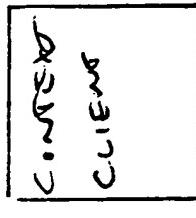


✓1331

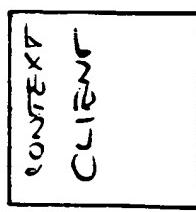
CONTEXT
CLIENT

✓1332

CONTEXT
CLIENT



✓1340



✓1350

✓1351

attribute request table

attribute name	context client name
user.location	distance_from_home
user.in_region	location_map
user.location [gps]	location_region_analysis
user.elevation	location_map

Figure 14

User.

Desired_privacy_level
Interruptibility
Speed
Direction
Acceleration
Availability.
 Cognitive_availability
 Tactile_availability
 Manual_availability
 Visual_availability
 Oral_availability
 Auditory_availability
Proximity.<Item or place name>

Mood.

Happiness
Sadness
Anger
Frustration
Confusion

Activity.

Driving
Eating
Running
Sleeping
Talking
Typing
Walking

Location.

Place_name
Latitude
Longitude
Altitude
Room
Floor
Building
Address
Street
City
County
State
Country
Postal_Code

Destination. (same as User.Location.)

Physiology.

Pulse
Body_temperature
Blood_pressure
Respiration

Person.<name or ID>. (same as User.)

Platform.

UI.

Oral_input_device_availability
Manual_input_device_availability
Tactile_output_device_availability
Visual_output_device_availability
Auditory_output_device_availability

Platform. (continued)

CPU.
 Load
 Speed
Memory.
 Total_capacity
 Used

Storage.
 Total_capacity
 Used

Connectivity.
 Connection_status
 Connection_speed
 Connection_type/device
 Connection_activity

Power.
 Power_source
 Power_level

Environment.

People.

Nearest
Number_present
Number_close

Local.

Time
Date
Temperature
Pressure
Wind_speed
Wind_direction
Absolute_humidity
High_forecast_temperature
Low_forecast_temperature
People_present
Ambient_noise_level
Ambient_light_level
Days.<previous or future>
 High_temperature
 Low_temperature
 Precipitation_type
 Precipitation_amount

Place.<place name>. (same as Environment.Local)

Application.

Mail.

Available
New_messages_waiting
Messages_waiting_to_be_sent

Phone.

Available
In_use
On/off
Notification_mechanism
Call_incoming
Caller_ID

Sound_recorder.

Available
Recording

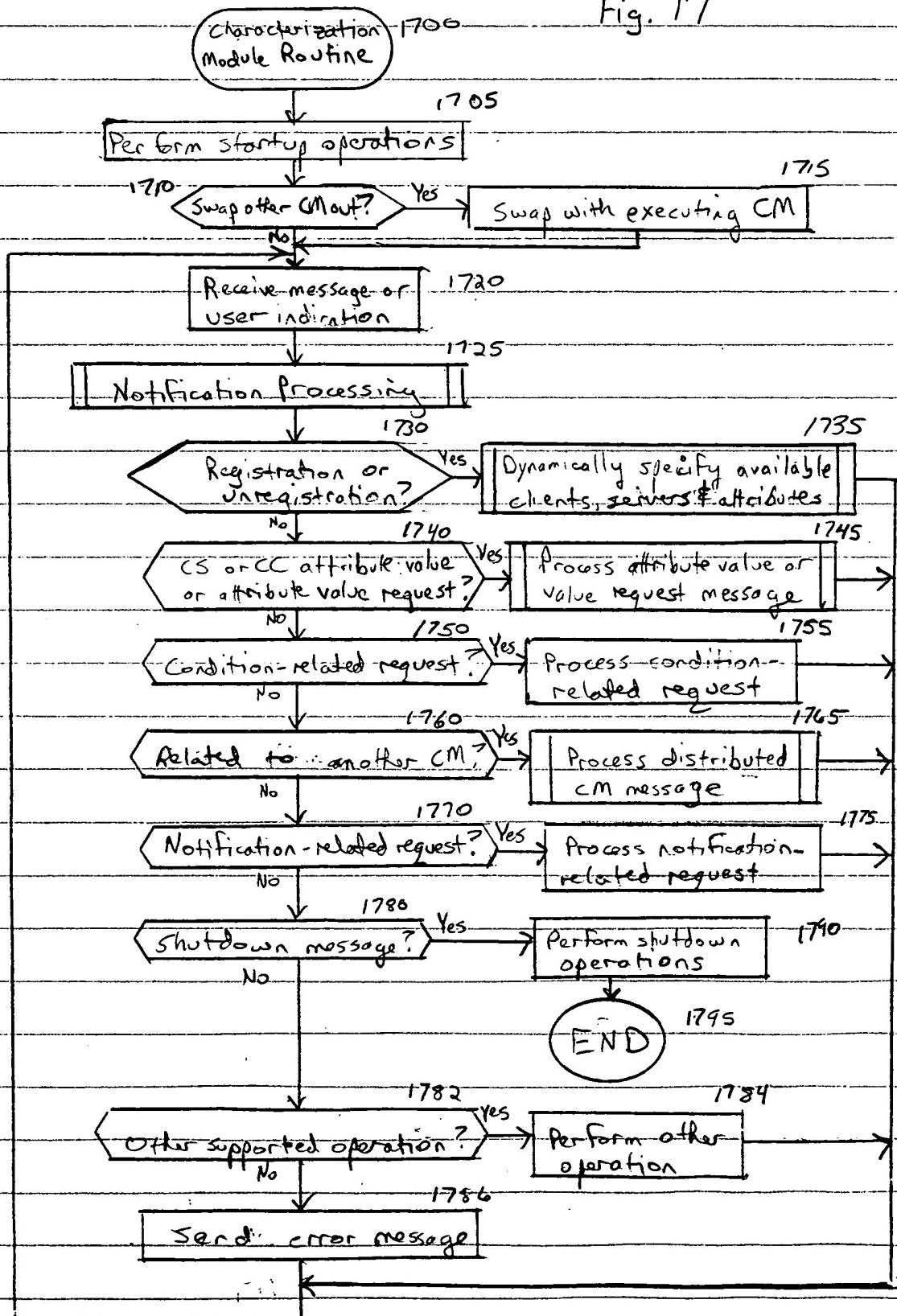
Fig. 15

- 1) User Setting
- a) Mental Context
 - i) Meaning
 - ii) Cognition
 - (1) Divided User Attention
 - (2) Task Switching
 - (3) Background Awareness
 - iii) Solitude
 - iv) Privacy
 - (1) Desired Privacy
 - (2) Perceived Privacy
 - v) Social Context
 - vi) Affect
 - b) Physical Situation
 - i) Body
 - (1) Biometrics
 - (2) Posture
 - (3) Motion
 - (4) Physical Encumbrment
 - (a) Senses
 - (i) Eyes
 - (ii) Ears
 - (iii) Tactile
 - (iv) Hands
 - (v) Nose
 - (vi) Tongue
 - (b) Workload demands/effects
 - (c) Interaction with computer devices
 - (d) Interaction with people
 - (e) Physical Health
 - ii) Environment
 - (1) Time/Space
 - (2) Objects
 - (3) Persons
 - (a) Audience/Privacy Availability
 - (i) Scope of Disclosure
 - (ii) Hardware affinity for privacy
 - (iii) Privacy Indicator for User
 - (iv) Privacy Indicator for Public
 - (v) Watching Indicator
 - (vi) Being Observed Indicator
 - (4) Ambient Interference
 - (a) Visual
 - (b) Audio
 - (c) Tactile

- 2) Computer
- a) Power
 - b) Configuration
 - i) User Input Systems
 - (1) Hand/Haptic
 - (a) Keyboard/Keystrokes
 - (2) Voice/Audio
 - (3) Eye Tracking
 - (4) Cursors
 - (a) Axis
 - (b) Resolution
 - (i) Selection
 - (ii) Invocation
 - (c) Accelerators
 - ii) Output Systems
 - (1) Visual
 - (a) Resolution
 - (2) Audio
 - (a) Public/Private
 - (3) Haptic
 - iii) External Resources
 - (1) I/O devices
 - (2) Connectivity
 - c) Data
 - i) Quantity/State
 - ii) Urgency/Importance
 - (1) Use of Prominence
 - iii) Modality
 - iv) Sensitivity/Purpose
 - (1) Privacy Issues
 - (2) Use of Association
 - (3) Use of Safety
 - v) Source/Ownership
 - (1) Types
 - (a) User generated
 - (b) Other computers or people
 - (c) Sensor
 - (d) PC State
 - (2) Use of Association

Fig. 16

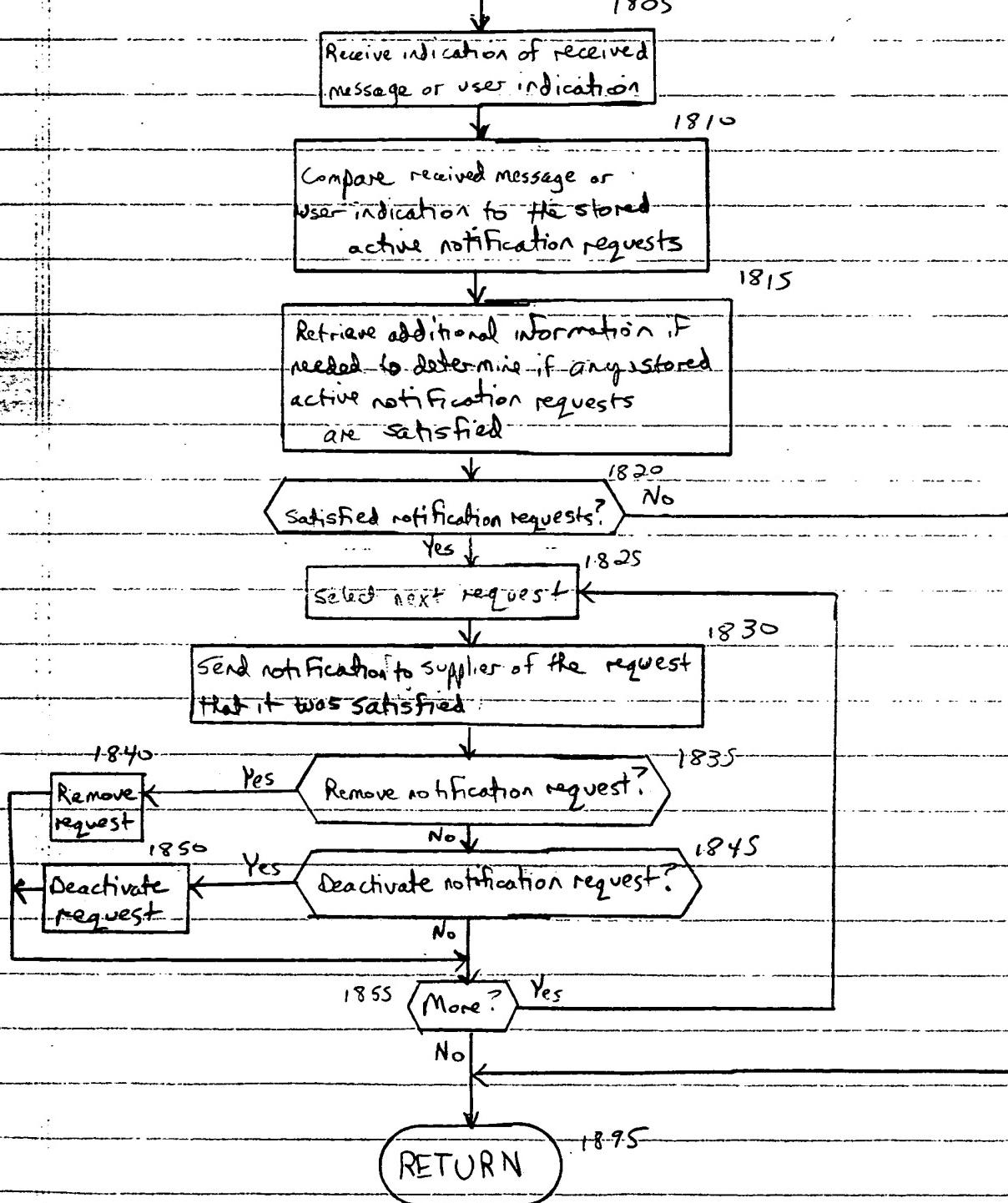
Fig. 17



Notification
processing
Subroutine

1725

Fig. 18



Dynamically Specify Available
Clients, Servers, & Attributes
Subroutine

1735

Fig. 19

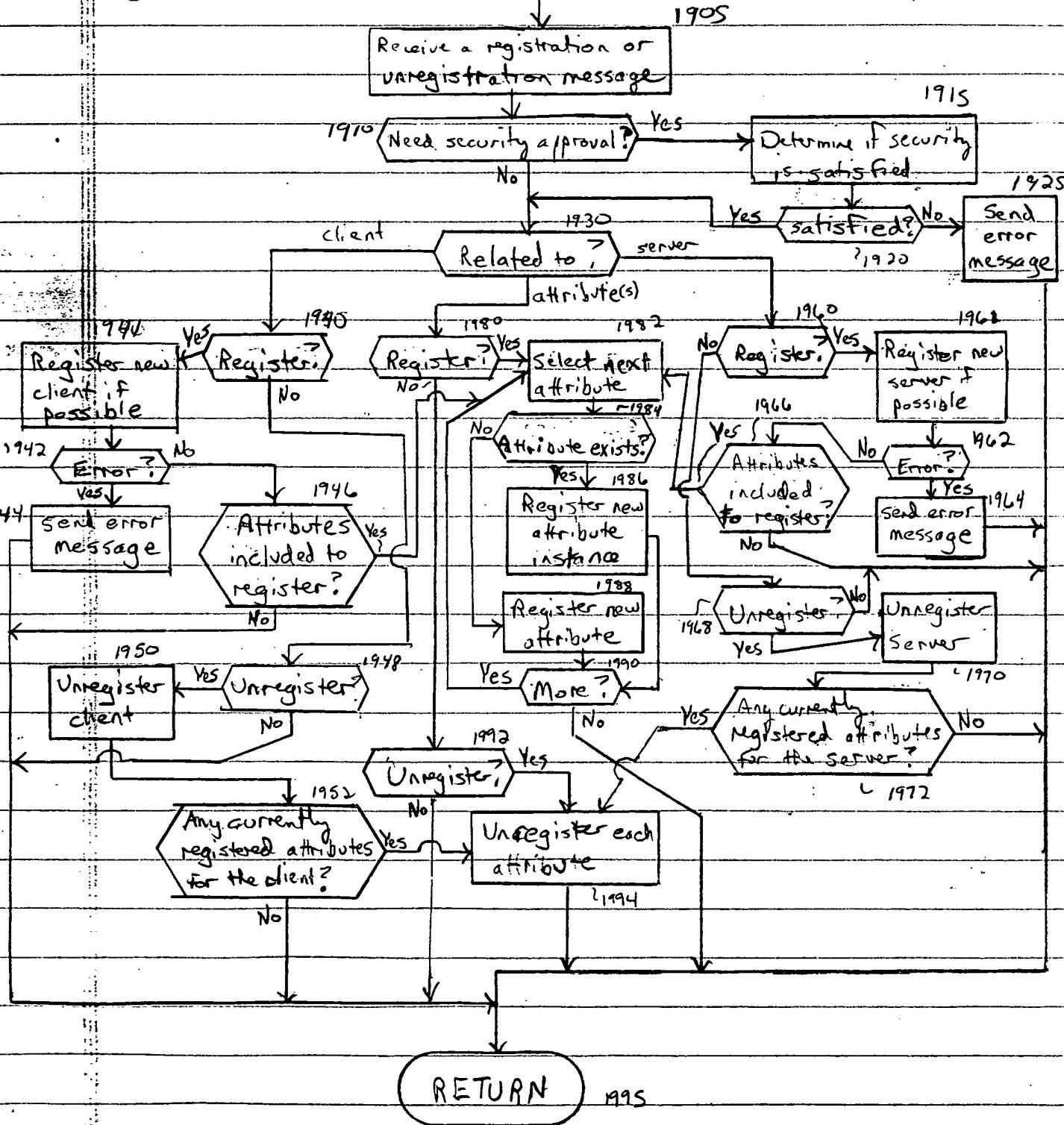


Fig. 20

Process Distributed
CM Message
Subroutine

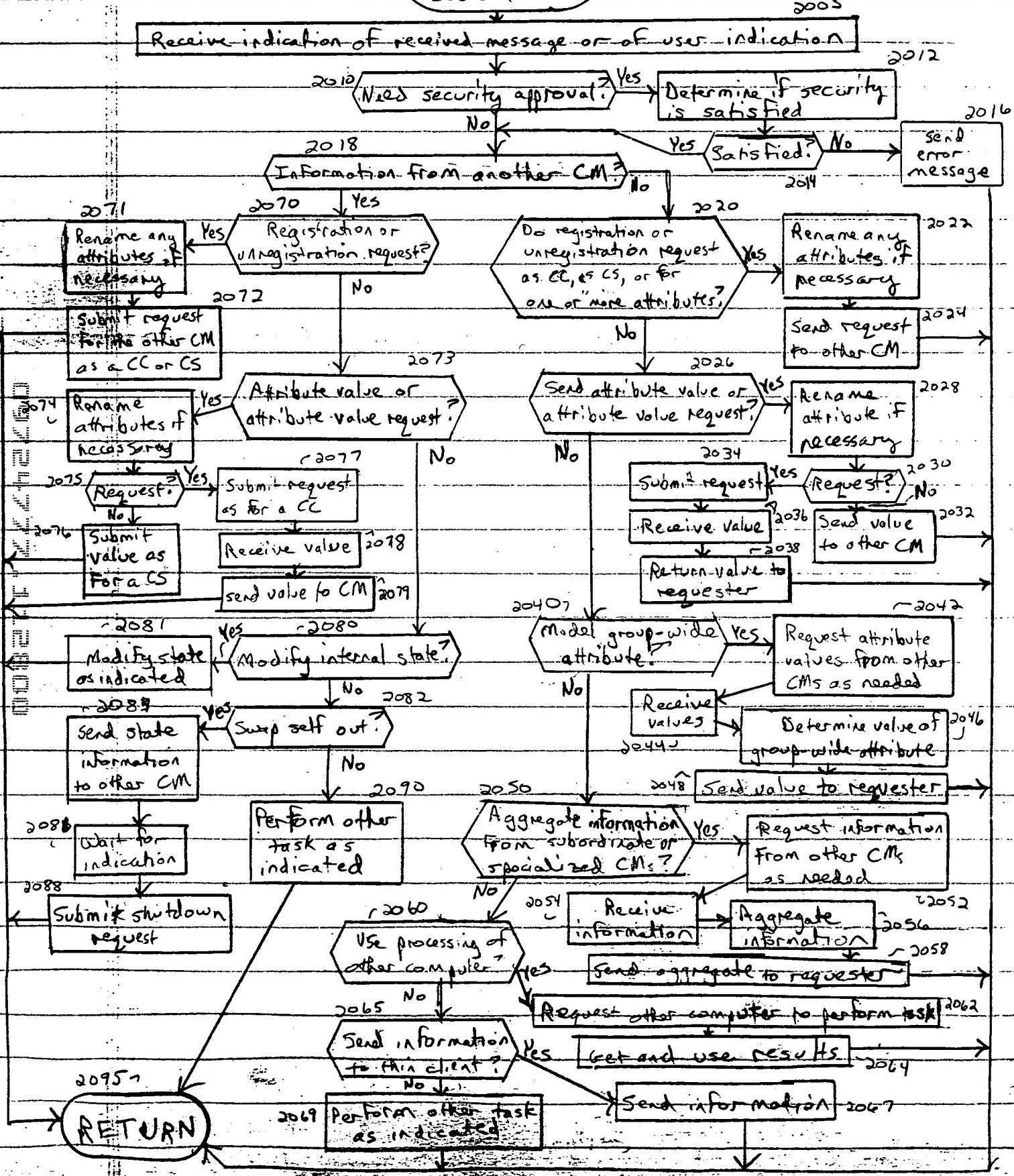


Fig. 21

1745

Process Attribute Value
Or Value Request Message
Subroutine

2105

Receive indication of received
attribute value or value request

Request
Value or request?

2150

2110

2120

Identify all attribute
instances matching
the request

Process received
attribute value

2154

Send
error
message

Any instances?

2152

Select next instance

2158

Need new value?

No

Pull attribute value
from server

2162
Receive value?

No

2164
Process received
attribute value

2166
More?

Yes

2168
Multiple values
available?

No

2170
Mediate available
values

2172
Send mediated value and
additional information
to requester

Value
Value or request?

2110

Process received
attribute value

Identify all attribute
value requests that
match the value

2125
Any requests?

No

Yes

multiple attribute
instance values?

2130
Select received value

2132
Select next request

2134
Push selected attribute
value to client

2136
More?

No

2140
Select received value

2142
More?

Yes

2174
Single value
available?

2176
Yes

2178
Send value and
additional
information
to requester

2178
Send error
message

RETURN

2195

Fig 22

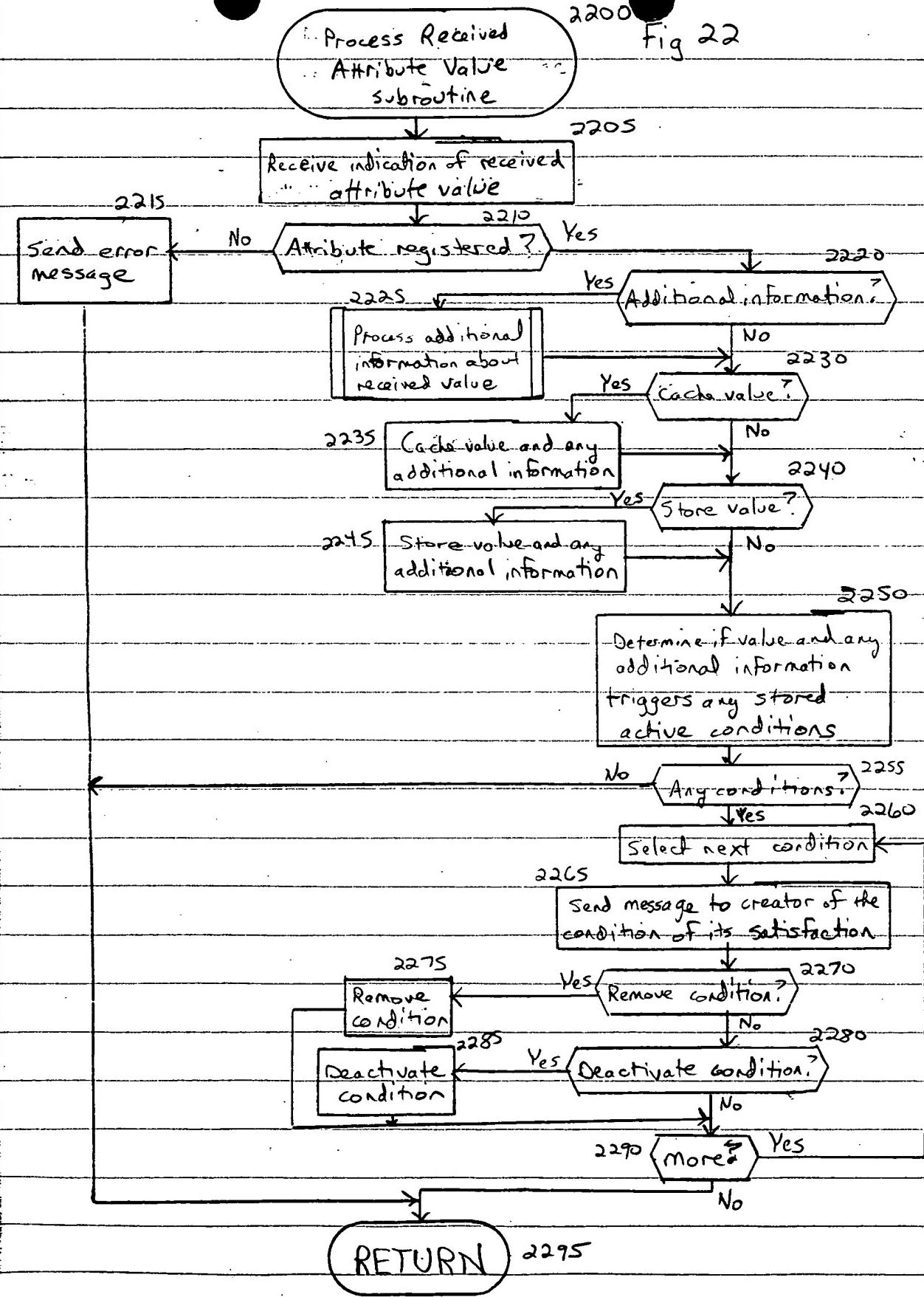


Fig. 23

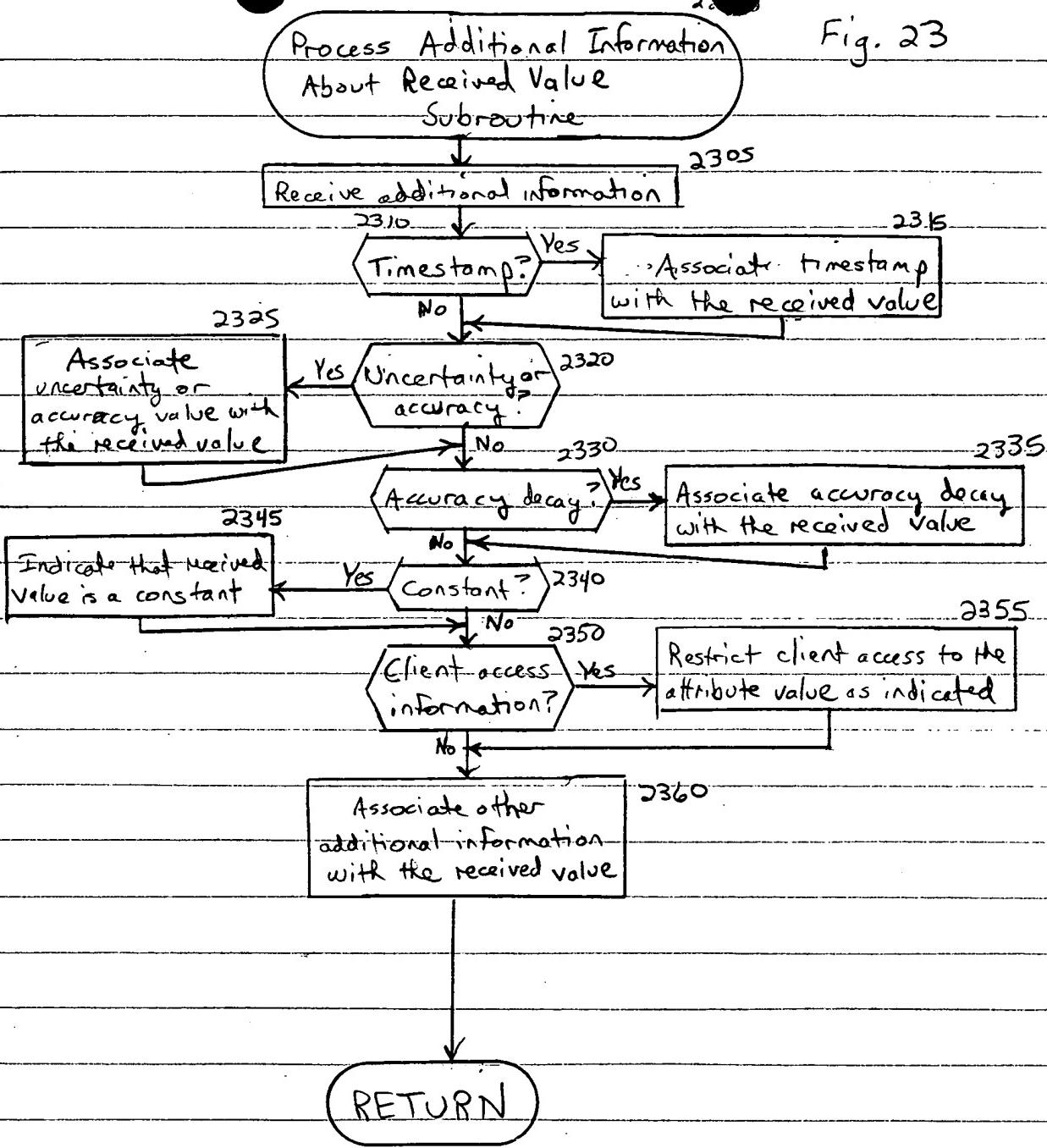
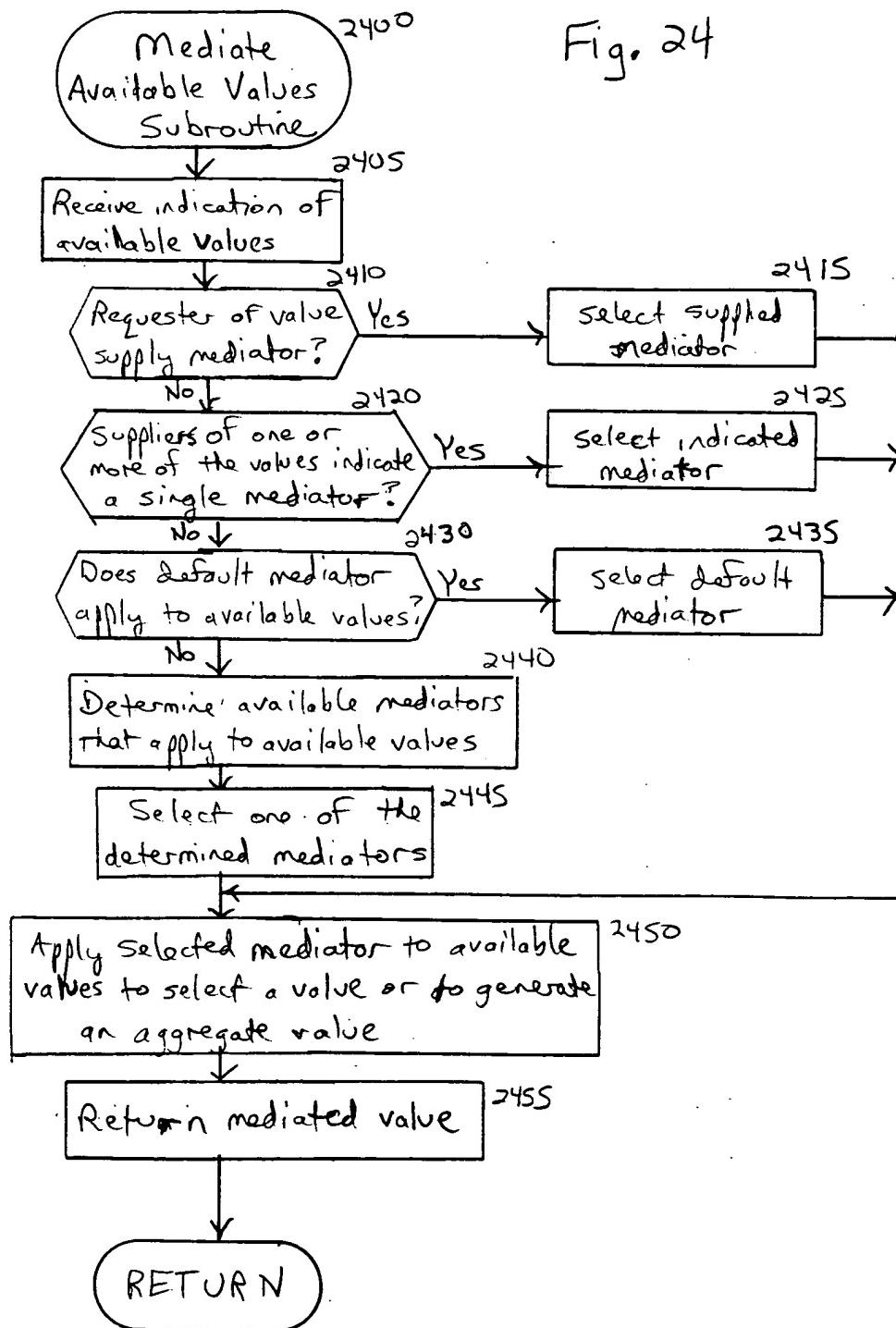


Fig. 24



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Fig. 25

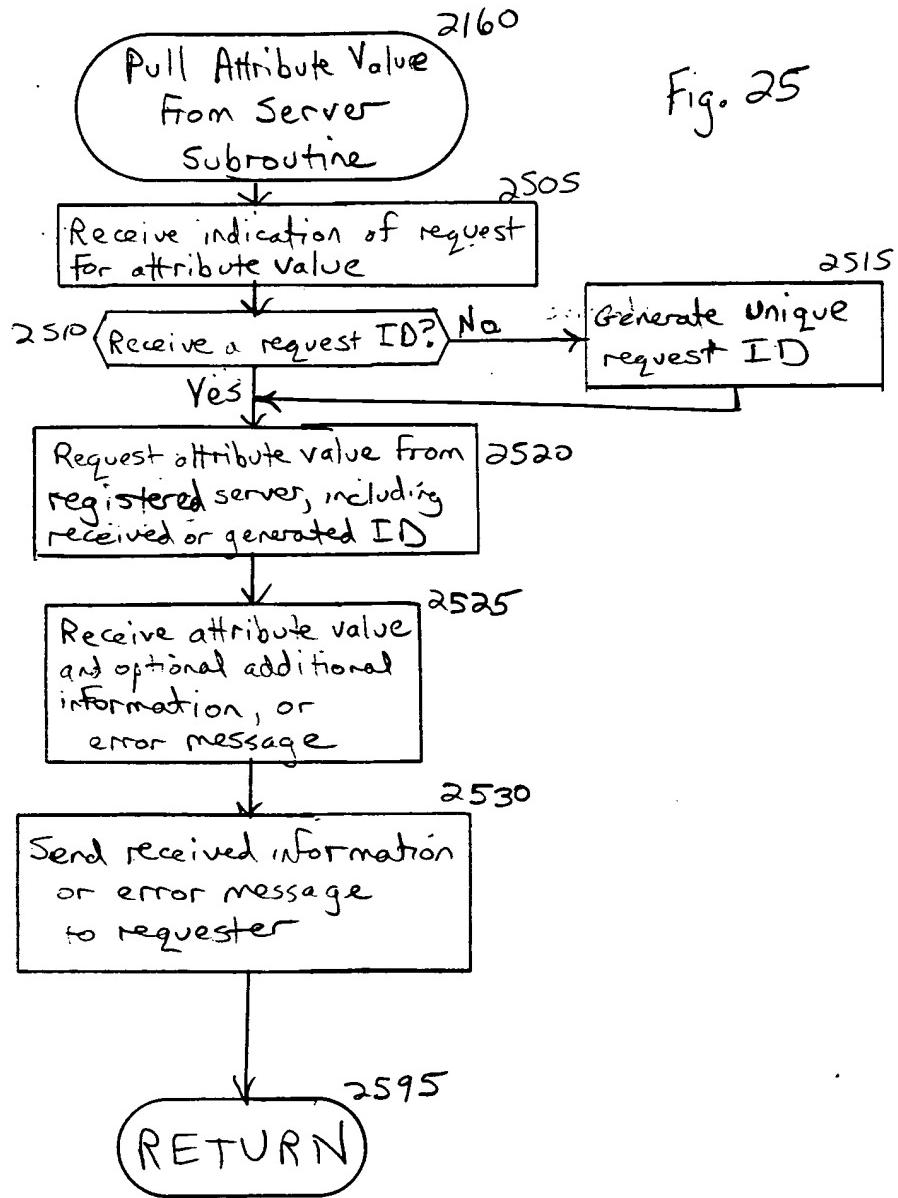


Fig. 26

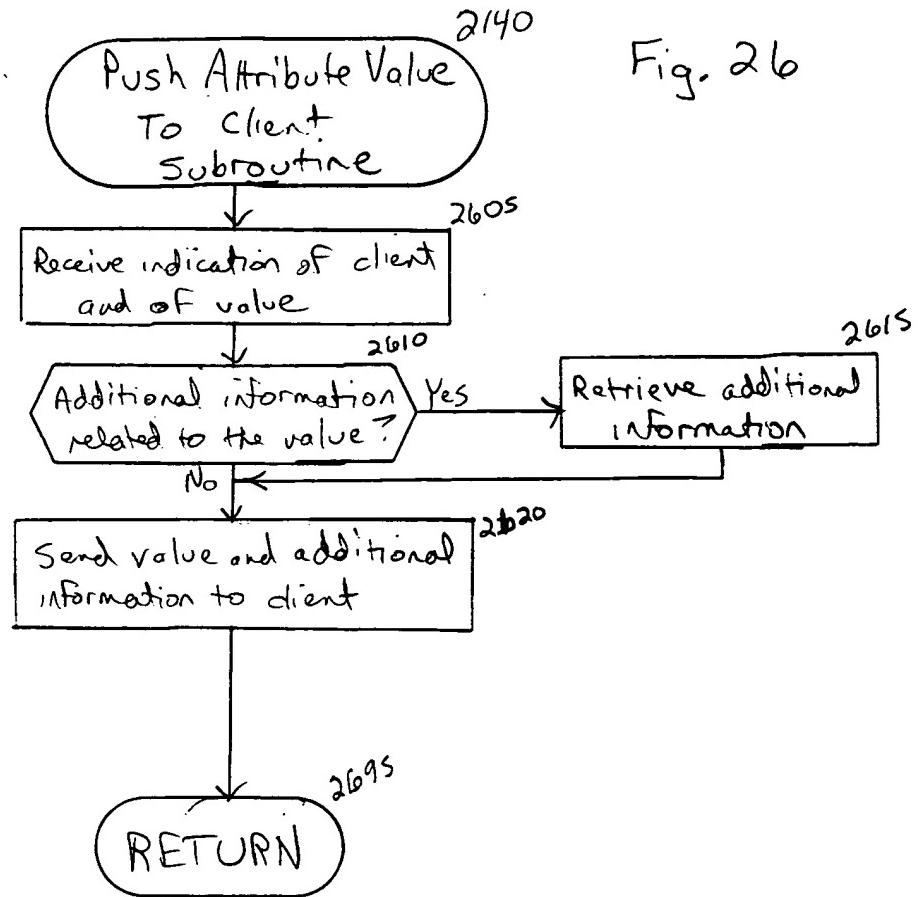


Fig. 27

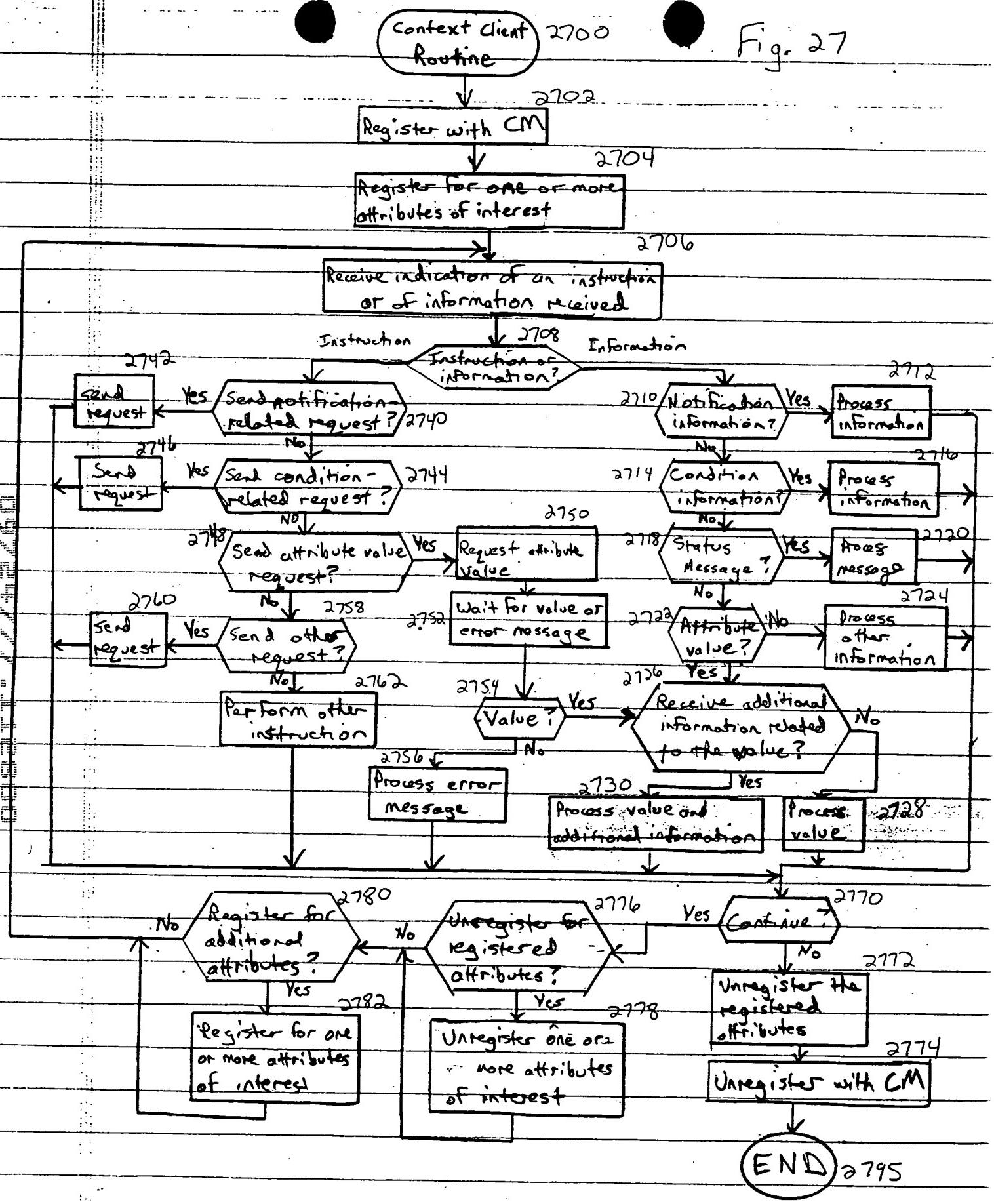


Fig. 28

